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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,839	02/25/2004	Parviz Tayebati	TAYE-0509	2957

7590 01/16/2008

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EXAMINER	
VAN ROY, TOD THOMAS	
ART UNIT	PAPER NUMBER
2828	

MAIL DATE	DELIVERY MODE
01/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/786,839	TAYEBATI ET AL.	
	Examiner	Art Unit	
	Tod T. Van Roy	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-11 and 13-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-11 and 13-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The examiner acknowledges the amending of claims 8 and 13, and the addition of claims 7-21.

Response to Arguments

Applicant's arguments, see Remarks, filed 11/09/2007, with respect to claim 13 have been fully considered and are persuasive. The rejection of the claim has been withdrawn.

The Examiner notes that Frankel teaches a tunable etalon placed after the grating in fig.2. An etalon can either be constructed of a prism between two reflective plates, or simply an air gap between two reflective plates. As Frankel does not specify the type of etalon used, the Examiner believes it was improper to assume the etalon was of the prism type. This action will therefor be made non-final to reflect the necessary change in the rejection of the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 8-11, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel et al. (US 2003/0193974) in view of Zorabedian (US 5325378).

With respect to claim 8, Frankel teaches a system for generating light at a variety of wavelengths and directing the same along a common axis, comprising: a plurality of tunable lasers ([0008]), each of the tunable lasers having a different base wavelength and being tunable therefrom (fig.4, [0033]), and each of the tunable lasers being spatially offset from on another (fig.2), a grating for receiving the light from each of the spatially offset tunable lasers (fig.2 #24) and directing the same along a common axis (fig.2 common beam axis towards fiber #18), wherein the grating is configured so that when each of the spatially offset tunable lasers is radiating at its base wavelength, the grating redirects the light from each of the spatially offset tunable lasers along the common axis (shown in fig.2), a first thermo-optic prism ([0023]) which improves beam quality and the shape of the light from the spatially offset tunable lasers (directs light from lasers to grating, and from grating towards the fiber) so that when the spatially offset tunable lasers are tuned so as to generate light at an adjusted wavelength which

is different from its base wavelength, the first thermo-optic prism will direct the light from each of the spatially offset tunable lasers into the grating at an angle which compensates for the difference between the adjusted wavelength and the base wavelength ([0023], prism is tuned, which would adjust the refractive index and steer the beams appropriately, also, the device is designed to direct all wavelengths into the fiber, so the steering must be present for the invention to function) so that the light from that laser will emerge from the grating along the common axis (shown in fig.2). Frankel does not teach an additional thermo-optic prism before the first prism noted above, or the first prism to have a thermistor for temperature monitoring. Zorabedian teaches a set of optics, including prisms, which are used in a tunable laser system (fig.2) and placed in before the grating structure. It would have been to one of ordinary skill in the art at the time of the invention to combine the system of Frankel with the optics of Zorabedian in order to separate the cavity resonance modes by greater wavelength intervals and increase mode selectivity (Zorabedian, col.3 lines 30-39), as well as to utilize the thermo-optic crystal type and method of Frankel with the newly added prisms in order to allow for adjustment of the refractive index and further tuning control of the system. It would also have been obvious to make use of a temperature monitoring device, such as a common thermistor, on the first prism of Frankel in order to make and monitor the adjustments to the refractive index as Frankel has disclosed.

With respect to claim 9, Frankel teaches a collimating lens positioned after the plurality of tunable lasers and before the first thermo-optic prism (fig.2 #13).

With respect to claim 10, Frankel teaches a focus lens positioned after the grating (fig.2 #16).

With respect to claim 11, Frankel teaches an optical fiber for receiving the light from the grating (fig.2 #18).

With respect to claims 14-15, Frankel teaches the first thermo-optic prism further comprises adjustment means for adjusting the temperature of the first thermo-optic prism so as to adjustably steer the optical beam ([0026]).

With respect to claim 16, Frankel and Zorabedian teach the system outlined in the rejection to claim 8 above, including the use of a plurality of diode lasers. Frankel does not teach the use of 12 lasers. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose an appropriate number of diodes, 12 or otherwise, in order to fit the desired power/WDM requirements of the system.

Claims 8-11, and 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel et al. (US 2003/0193974).

With respect to claim 8, Frankel teaches a system for generating light at a variety of wavelengths and directing the same along a common axis, comprising: a plurality of tunable lasers ([0008]), each of the tunable lasers having a different base wavelength and being tunable therefrom (fig.4, [0033]), and each of the tunable lasers being spatially offset from on another (fig.2), a grating for receiving the light from each of the spatially offset tunable lasers (fig.2 #24) and directing the same along a common axis (fig.2 common beam axis towards fiber #18), wherein the grating is configured so that

when each of the spatially offset tunable lasers is radiating at its base wavelength, the grating redirects the light from each of the spatially offset tunable lasers along the common axis (shown in fig.2), a first thermo-optic prism ([0023]) for steering the light from each of the spatially offset tunable lasers (directs light from lasers to grating, and from grating towards the fiber) so that when the spatially offset tunable lasers are tuned so as to generate light at an adjusted wavelength which is different from its base wavelength, the first thermo-optic prism will direct the light from each of the spatially offset tunable lasers into the grating at an angle which compensates for the difference between the adjusted wavelength and the base wavelength ([0023], prism is tuned, which would adjust the refractive index and steer the beams appropriately, also, the device is designed to direct all wavelengths into the fiber, so the steering must be present for the invention to function) so that the light from that laser will emerge from the grating along the common axis (shown in fig.2), and an etalon (fig.2 #26, [0024], etalon being a transparent plate, taught to be tunable) for correcting an aberration introduced by the first thermo-optic prism in order to restore the quality of the light from each of the spatially offset tunable lasers ([0024], corrects for wavelength stabilization and improves the quality of the linewidth). Frankel does not teach the etalon to be of the prism type and then both of the thermo-optic prisms to be located before the grating, or the first prism to have a thermistor for temperature monitoring. It would have been obvious to one of ordinary skill in the art to utilize a thermo-optic prism for the etalon as this is one of two types of etalon construction and would allow for the wavelength tuning taught by Frankel, as well as to place both prisms prior to the grating as a matter of engineering

design choice, not affecting the overall operation of the system (see MPEP – 2144.04 IV C – Rearrangement of Parts). It would also have been obvious to make use of a temperature monitoring device, such as a common thermistor, on the first prism of Frankel in order to make and monitor the adjustments to the refractive index as Frankel has disclosed.

With respect to claim 9, Frankel teaches a collimating lens positioned after the plurality of tunable lasers and before the first thermo-optic prism (fig.2 #13).

With respect to claim 10, Frankel teaches a focus lens positioned after the grating (fig.2 #16).

With respect to claim 11, Frankel teaches an optical fiber for receiving the light from the grating (fig.2 #18).

With respect to claim 13, Frankel teaches that which is outlined in the rejection to claim 8 above, and Frankel also teaches the first thermo-optic prism is positioned between the plurality of tunable lasers and the grating, and the second thermo-optic prism is positioned after the grating (fig.2, after the use of a prism etalon).

With respect to claims 14-15, Frankel teaches the first thermo-optic prism further comprises adjustment means for adjusting the temperature of the first thermo-optic prism so as to adjustably steer the optical beam ([0026]).

With respect to claim 16, Frankel teaches the system outlined in the rejection to claim 1 above, including the use of a plurality of diode lasers. Frankel does not teach the use of 12 lasers. It would have been obvious to one of ordinary skill in the art at the

time of the invention to choose an appropriate number of diodes, 12 or otherwise, in order to fit the desired power/WDM requirements of the system.

With respect to claim 17, Frankel teaches a collimating lens positioned after the tunable lasers (fig.2 #13).

With respect to claim 18, Frankel teaches a focusing lens placed after the grating (fig.2 #16).

With respect to claim 19, Frankel teaches a fiber to receive light from the grating (fig.2 #18).

Claims 20-22 are rejected for the same reasons outlined in the rejection to claims 14-16 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TVR